

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously submitted) A database system for organizing data elements according to a Hilbert curve, said data elements being representable by a plurality of coordinates, said database system comprising:

first means for generating a plurality of bitblocks by bitwise interleaving the coordinates of the data elements;

second means for applying a fliprot transformation to a first bitblock;

said fliprot transformation comprising a flip transformation and a rotation transformation, said flip transformation inverting bits of said first bitblock, said rotation transformation interchanging bits of said first bitblock;

third means for obtaining, for each further bitblock, a fliprot transformation by a concatenation of two or more fliprot transformations;

fourth means for applying fliprot transformations to their corresponding bitblock; and

fifth means for accessing said data elements;

whereby the bitblock bits determine the organization of said data elements according to said Hilbert curve.

2. (previously submitted) A method of organizing data elements of a database according to a Hilbert curve, said data elements being representable by a plurality of coordinates, said method comprising the following steps:

generating a plurality of bitblocks by bitwise interleaving the coordinates of the data elements;

applying a predetermined fliprot transformation to a first bitblock;

said fliprot transformation comprising a flip transformation and a rotation transformation, said flip transformation inverting bits of said first bitblock, said rotation transformation interchanging bits of said first bitblock;

for each further bitblock, obtaining a fliprot transformation by a concatenation of two or more fliprot transformations;
applying fliprot transformations to their corresponding bitblock; and
accessing said data elements;
whereby the bitblock bits determine the organization of said data elements according to said Hilbert curve.

3. (previously submitted) The method according to claim 2, wherein said rotation transformation of said first bitblock and said rotation transformation of each said further bitblock cyclically shifts the bits of said respective bitblock.
4. (original) The method of claim 2, wherein organizing is a means for at least one of searching, sorting, storing, retrieving, inserting, deleting, querying, range querying, data elements in said database system.
5. (original) The method of claim 2 for range querying data elements in said database, with a BIGMIN calculation including a candidate calculation wherein said candidate is kept in form of rectangle data.
6. (original) A computer-readable data storage medium for storing program code for executing, when being loaded into a computer, the method according to claim 2.
7. (new) The database system of claim 1, wherein the fifth means for accessing said data elements includes means for loading said data elements into RAM to be used by a local application.
8. (new) The database system of claim 1, wherein the fifth means for accessing said data elements includes means for providing said data elements to an output device.
9. (new) The database system of claim 8, wherein the fifth means for accessing said data elements includes means for providing said data elements to at least one of a display device and a printing device.

10. (new) The database system of claim 1, wherein the fifth means for accessing said data elements includes means for at least one of reading, writing, and modifying said data elements.
11. (new) The database system of claim 1, wherein the fifth means for accessing said data elements includes means for copying said data elements to a memory device.
12. (new) The method of claim 2, wherein accessing said data elements includes loading said data elements into RAM to be used by a local application.
13. (new) The method of claim 2, wherein accessing said data elements includes providing said data elements to an output device.
14. (new) The method of claim 13, wherein accessing said data elements includes providing said data elements to at least one of a display device and a printing device.
15. (new) The method of claim 2, wherein accessing said data elements includes at least one of reading, writing, and modifying said data elements.
16. (new) The method of claim 2, wherein accessing said data elements includes copying said data elements to a memory device.
17. (new) The database system of claim 1, wherein inverting bits of said first bitblock includes inverting values of the bits of said first bitblock.
18. (new) The database system of claim 1, wherein interchanging bits of said first bitblock includes performing a one-dimensional shift of the bits of said first bitblock.
19. (new) The method of claim 2, wherein inverting bits of said first bitblock includes inverting values of the bits of said first bitblock.
20. (new) The method of claim 2, wherein interchanging bits of said first bitblock includes performing a one-dimensional shift of the bits of said first bitblock.